

Objective

The objective of to deploy an object store cluster

Setup

- a. Examine MinIO image on Docker Hub
(<https://hub.docker.com/r/bitnami/minio>)

MinIO Object Store

MinIO is an open source S3 compatible object storage (<https://github.com/minio/minio>). It is typically deployed as a 4 node cluster.

Each MinIO node requires an attached storage to hold its data.

A MinIO server is started with the following command line and options

```
minio server \  
  --address=:9000 --console-address=:9090 \  
  http://<domain_name>{0...3}/data
```

where `http://<domain_name>{0...3}/data` defines a 4 node server pool. The `{0...3}` expands to 0, 1, 2 and 3.

For example, if a 4 node server pool were to be deployed to `node1.example.net`, `node1.example.net`, `node2.example.net` and `node3.example.net` and `node4.example.net`, then the following command should be used to start the MinIO server on each of the node

```
minio server \  
  --address=:9000 --console-address=:9090 \  
  http://node{1...4}.example.net/data
```

Port 9000 is the MinIO server port and 9090 is the web console.

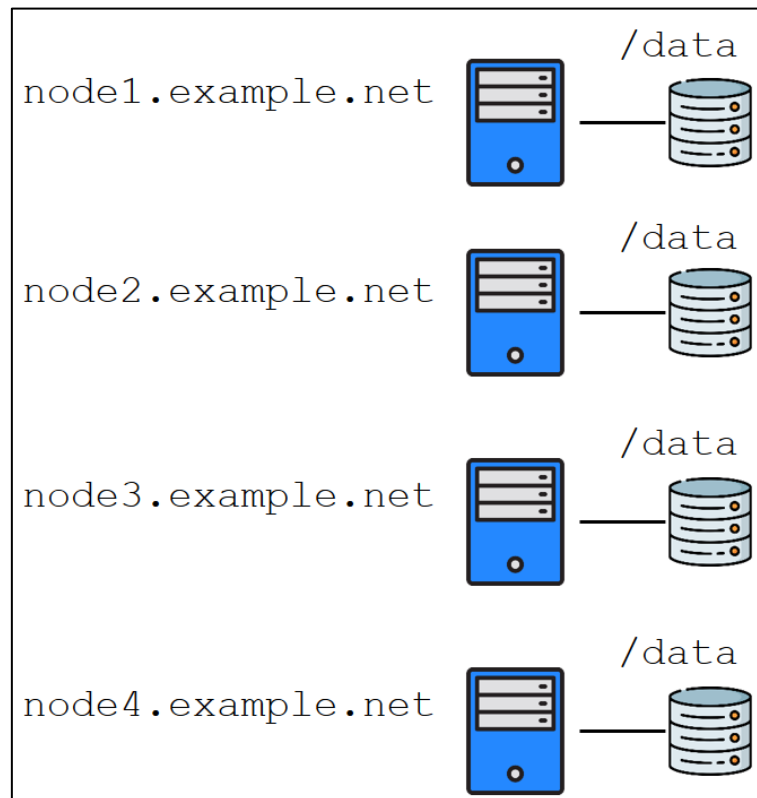
See <https://min.io/docs/minio/linux/reference/minio-server/minio-server.html#command-minio.server> for more command line options.

Look up the description of the following environment variables and set according to the above MinIO startup command.

- **MINIO_ROOT_USER**
- **MINIO_ROOT_PASSWORD**

- **MINIO_DATA_DIR**
- **MINIO_DISTRIBUTED_MODE_ENABLED**
- **MINIO_DISTRIBUTED_NODES**
- **MINIO_API_PORT_NUMBER**
- **MINIO_CONSOLE_PORT_NUMBER**

The following figure shows the above-mentioned deployment.



Workshop

Create a Kubernetes deployment to deploy a 4 node MinIO cluster. Set the CPU and memory consumption of each server to 200m and 250MB respectively.

Scale the nodes only if the server requires significantly more resources.

Expose the MinIO port and web console as

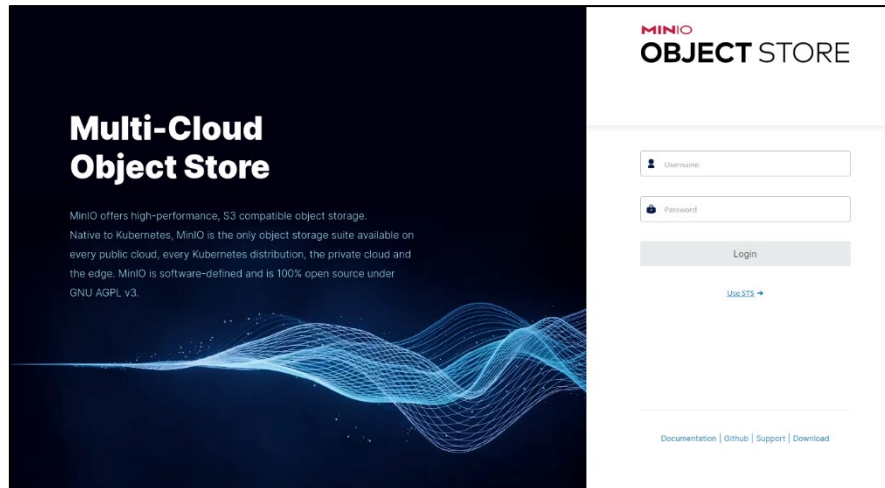
```
data-<Ingress IP>.sslip.io
```

```
console-<Ingress IP>.sslip.io
```

Note: we are using `nip.io` to simulate a domain name for the 2 endpoints.

Protect both the endpoints from DDoS attack.

Navigate to the console endpoint and you will be greeted with the following page



Use the configure username and password to login.

Additional Requirements

Use the `bitnami/minio` image

MINIO_ROOT_PASSWORD should be at least 8 characters in length

Add the following YAML snippet to the `StatefulSet`'s pod template

```
securityContext:
  fsGroup: 1001
```

Submission

Create a Git repo for this course if you have not done so. Clone the Git repo. This repo will be used for all the assignment for this course. This should be the same repos as you used for previous workshops.

Email the repo's URL to your instructor. Email will be provided.

Create a directory called `workshop04` inside your repo. Placed all the file for this workshop inside `workshop04` directory.